UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,391	08/27/2003	Heather N. Bean	10018582-1	5319

22879 7590 01/18/2007
HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
KHAN, USMAN A	
ART UNIT	**PAPER NUMBER**
2622	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/648,391	BEAN ET AL.	
	Examiner	Art Unit	
	Usman Khan	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 08/27/2003 has been considered by the examiner. The submission is in compliance with the provisions of 37 CFR 1.97.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 20 - 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinjo et al. (US patent No. 6,631,208).

Regarding **claim 20,** Kinjo et al. discloses a pixel-differentiated CCD architecture comprising: a first plurality of non-sampling arrays that include a first type of photosensor (column 3, lines 32 *et seq.* figures 15A – 15F and 20A – 20B, column 18 lines 20 – 26); and a second plurality of sampling arrays that include the first type of photosensor and a second type of photosensor (column 3, lines 32 *et seq.* figures 15A – 15F and 20A – 20B, column 18 lines 20 – 26), each sampling array being arranged so

that sample-information from the second type photosensor can be transferred out of the sampling array without the sample-information having to be conveyed via any of the first type photosensors in the sampling array (column 13, lines 18 *et seq.*); and transfer means for transferring information out of one or more selected second type photosensors without also having to transfer information contained in first type photosensors (column 4, lines 2 *et seq.*).

Regarding **claim 21**, as mentioned above in the discussion of claim 20, Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that pixel-differentiated imager architecture comprising: a first plurality of blocks (figure 6 and figure 20 A-B, Area 5 i.e. pixels are arranged in areas i.e. blocks of similar areas), each block having a second plurality of photo-sensing pixels arranged in a matrix (figure 6 and figure 20 A-B, Area 5 i.e. pixels are arranged in areas i.e. blocks of similar areas), each pixel being classified according to type from among a plurality of types including a first type and a second type of photo-sensing pixel (figure 6 and figure 20 A-B, Area 5 i.e. pixels are arranged in areas i.e. blocks of similar areas); and read circuitry controllable to respectively read one or more of the second type pixels independently of reading the first type pixels, the read-circuitry not being controllable to read all of the pixels individually (column 3, lines 32 *et seq.*).

Regarding **claim 22**, as mentioned above in the discussion of claim 21, Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that the imager is implemented as a CCD (column 9, lines 60 *et seq.*).

Regarding **claim 23**, as mentioned above in the discussion of claim 21, Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that the read circuitry is controllable to read respectively read one or more of the blocks without having to read all of the blocks, the read-circuitry not being controllable to read all of the first type pixels in a block individually (figure 6 and figure 20 A-B, Area 5 i.e. pixels are arranged in areas i.e. blocks of similar areas).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3 – 8, 14, 16 – 17, and 24 - 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanpei (US PgPub 2001/0050715) in further view of Kinjo et al. (US patent No. 6,631,208).

Regarding **claim 1,** Sanpei discloses a pixel-differentiated CCD imager architecture (paragraphs 0027 and 0035 and figure 4) comprising: a plurality of photo-sensing pixels arranged in a matrix (paragraphs 0027 and 0035 and figure 4), the

sampling being obtainable without having to read all of the plurality of pixels (paragraphs 0027 and 0035 and figure 4).

However, Sanpei fails to disclose that each pixel are classified according to type from among a plurality of photo-sensing pixel types; and read circuitry controllable to respectively read one or more of a second type of pixel independently of reading a first type of pixel, the reading of one or more first type pixels representing a sampling of fewer than all of the plurality of pixels. Kinjo et al., on the other hand teaches that each pixel are classified according to type from among a plurality of photo-sensing pixel types; and read circuitry controllable to respectively read one or more of a second type of pixel independently of reading a first type of pixel, the reading of one or more first type pixels representing a sampling of fewer than all of the plurality of pixels.

More specifically, Kinjo et al. teaches that each pixel are classified according to type from among a plurality of photo-sensing pixel types (column 3, lines 32 *et seq.* figures 15A – 15F and 20A – 20B, column 18 lines 20 – 26); and read circuitry controllable to respectively read one or more of a second type of pixel independently of reading a first type of pixel (column 13, lines 18 *et seq.*), the reading of one or more first type pixels representing a sampling of fewer than all of the plurality of pixels (column 4, lines 2 *et seq.*).

One of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate the teachings of Kinjo et al. with the teachings of Sanpei because in column 3, lines 31 - 50 Kinjo et al. teaches that the use of the image

correcting method in the invention will result in a select region being naturally corrected which in turn will result in a smoother image.

Regarding **claim 3**, as mentioned above in the discussion of claim 1, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that there are fewer second type pixels than first type pixels. (figure 6 and figure 20 A-B, Area 5 i.e. second type pixels are less then all other types of pixels).

Regarding **claim 4**, as mentioned above in the discussion of claim 3, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that the second type pixels are arranged amongst the first type pixels such that the second type pixels are uniformly distributed amongst the first type pixels (figure 6 and figure 20 A-B, Area 5 i.e. second type pixels are arranged near all other types of pixels).

Regarding **claim 5**, as mentioned above in the discussion of claim 1, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Sanpei teaches that a total area covered by the plurality of pixels is organized into a central portion and peripheral portion (figure 4); the second type pixels are arranged amongst the first type pixels such that a density of second type pixels in the central

portion is higher than in the peripheral portion (figure 4; paragraph 0035 and paragraph 0038).

Regarding **claim 6**, as mentioned above in the discussion of claim 5, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Sanpei teaches that a distribution of the second type pixels amongst the first type pixels is, for each of the respective central and peripheral portions a uniform distribution (figure 4).

Regarding **claim 7**, as mentioned above in the discussion of claim 1, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that the first type pixels are organized into blocks; and the read circuitry is further controllable to read selected ones of blocks (figure 6 and figure 20 A-B, Area 5 i.e. pixels are arranged in areas i.e. blocks of similar areas).

Regarding **claim 8**, as mentioned above in the discussion of claim 7, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that the reading of the selected blocks of first type pixels represents a sampling of fewer than all of blocks without having to read all of the blocks (figure 6 and figure 20 A-B, pixels are arranged in areas i.e. blocks of similar areas).

Regarding **claim 14,** Sanpei discloses a method of operating a CCD imager, the imager having a pixel-differentiated architecture that includes a plurality of photo-sensing pixels arranged in a matrix (paragraphs 0027 and 0035 and figure 4), a sampling being obtainable without having to read all of the plurality of pixels (paragraphs 0027 and 0035 and figure 4).

However, Sanpei fails to disclose that each pixel being classified according to type from among a plurality of photo-sensing pixel-types including a first type and a second type of photo-sensing pixel, the method comprising: reading one or more of the second type pixels independently of reading the first type pixels, the reading of one or more second type pixels representing a sampling of fewer than all of the plurality of pixels. Kinjo et al., on the other hand teaches that each pixel being classified according to type from among a plurality of photo-sensing pixel-types including a first type and a second type of photo-sensing pixel, the method comprising: reading one or more of the second type pixels independently of reading the first type pixels, the reading of one or more second type pixels representing a sampling of fewer than all of the plurality of pixels.

More specifically, Kinjo et al. teaches that each pixel being classified according to type from among a plurality of photo-sensing pixel-types including a first type and a second type of photo-sensing pixel (column 3, lines 32 *et seq.* figures 15A – 15F and 20A – 20B, column 18 lines 20 – 26), the method comprising: reading one or more of the second type pixels independently of reading the first type pixels (column 13, lines 18

et seq.), the reading of one or more second type pixels representing a sampling of fewer than all of the plurality of pixels (column 4, lines 2 *et seq.*).

One of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate the teachings of Kinjo et al. with the teachings of Sanpei because in column 3, lines 31 - 50 Kinjo et al. teaches that the use of the image correcting method in the invention will result in a select region being naturally corrected which in turn will result in a smoother image.

Regarding **claim 16**, as mentioned above in the discussion of claim 14, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that organizing the first type pixels into blocks; and selectively transferring information from selected ones of the blocks (figure 6 and figure 20 A-B, Area 5 i.e. pixels are arranged in areas i.e. blocks of similar areas).

Regarding **claim 17**, as mentioned above in the discussion of claim 16, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches selectively transferring fewer than all blocks without having to transfer information from all of the blocks (figure 6 and figure 20 A-B, pixels are arranged in areas i.e. blocks of similar areas).

Regarding **claim 24,** Sanpei discloses a digital camera comprising: pixel-differentiated CCD imager architecture (paragraphs 0027 and 0035 and figure 4)

including a plurality of photo-sensing pixels arranged in a matrix (paragraphs 0027 and 0035 and figure 4), the sampling being obtainable without having to read all of the plurality of pixels (paragraphs 0027 and 0035 and figure 4).

However, Sanpei fails to disclose that each pixel being classified according to type from among a plurality of photo-sensing pixel-types including a first type and a second type of photo-sensing pixel and read circuitry controllable to respectively read one or more of the second type pixels independently of reading the first type pixels, the reading of one or more second type pixels representing a sampling of fewer than all of the plurality of pixels and image processing means for controlling the read circuitry and processing the output of the pixel-differentiated CCD imager into a digital representation of an image captured by the pixel-differentiated CCD imager. Kinjo et al., on the other hand teaches that each pixel being classified according to type from among a plurality of photo-sensing pixel-types including a first type and a second type of photo-sensing pixel and read circuitry controllable to respectively read one or more of the second type pixels independently of reading the first type pixels, the reading of one or more second type pixels representing a sampling of fewer than all of the plurality of pixels and image processing means for controlling the read circuitry and processing the output of the pixel-differentiated CCD imager into a digital representation of an image captured by the pixel-differentiated CCD imager.

More specifically, Kinjo et al. teaches that each pixel being classified according to type from among a plurality of photo-sensing pixel-types including a first type and a second type of photo-sensing pixel (column 3, lines 32 *et seq.* figures 15A – 15F and

20A – 20B, column 18 lines 20 – 26), and read circuitry controllable to respectively read one or more of the second type pixels independently of reading the first type pixels (column 13, lines 18 *et seq.*), the reading of one or more second type pixels representing a sampling of fewer than all of the plurality of pixels (column 4, lines 2 *et seq.*) and image processing means for controlling the read circuitry and processing the output of the pixel-differentiated CCD imager into a digital representation of an image captured by the pixel-differentiated CCD imager (column 4, lines 2 *et seq.*).

One of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate the teachings of Kinjo et al. with the teachings of Sanpei because in column 3, lines 31 - 50 Kinjo et al. teaches that the use of the image correcting method in the invention will result in a select region being naturally corrected which in turn will result in a smoother image.

Regarding **claim 25,** Sanpe i discloses a digital camera comprising: a pixel-differentiated CCD imager (paragraphs 0027 and 0035 and figure 4). However, Sanpei fails to disclose that the CCD imager includes a first plurality of blocks, each block having a second plurality of photo-sensing pixels arranged in a matrix, each pixel being classified according to type from among a plurality of photo-sensing pixel-types including a first type and a second type of photo-sensing pixel; and read circuitry controllable to respectively read one or more of the second type pixels independently of reading the first type pixels, the read-circuitry not being controllable to read all of the pixels individually; and image processing means for controlling the read circuitry and

processing the output of the pixel-differentiated CCD imager into a digital representation of an image captured by the pixel-differentiated CCD imager. Kinjo et al., on the other hand teaches the CCD imager includes a first plurality of blocks, each block having a second plurality of photo-sensing pixels arranged in a matrix, each pixel being classified according to type from among a plurality of photo-sensing pixel-types including a first type and a second type of photo-sensing pixel; and read circuitry controllable to respectively read one or more of the second type pixels independently of reading the first type pixels, the read-circuitry not being controllable to read all of the pixels individually; and image processing means for controlling the read circuitry and processing the output of the pixel-differentiated CCD imager into a digital representation of an image captured by the pixel-differentiated CCD imager.

More specifically, Kinjo et al. teaches that the CCD imager includes a first plurality of blocks (figure 6 and figure 20 A-B, Area 5 i.e. pixels are arranged in areas i.e. blocks of similar areas), each block having a second plurality of photo-sensing pixels arranged in a matrix (figure 6 and figure 20 A-B, Area 5 i.e. pixels are arranged in areas i.e. blocks of similar areas), each pixel being classified according to type from among a plurality of photo-sensing pixel-types including a first type and a second type of photo-sensing pixel (figure 6 and figure 20 A-B, Area 5 i.e. pixels are arranged in areas i.e. blocks of similar areas); and read circuitry controllable to respectively read one or more of the second type pixels independently of reading the first type pixels, the read-circuitry not being controllable to read all of the pixels individually (column 3, lines 32 *et seq.*); and image processing means for controlling the read circuitry and processing the output

of the pixel-differentiated CCD imager into a digital representation of an image captured by the pixel-differentiated CCD imager (column 4, lines 2 *et seq.*).

One of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate the teachings of Kinjo et al. with the teachings of Sanpei because in column 3, lines 31 - 50 Kinjo et al. teaches that the use of the image correcting method in the invention will result in a select region being naturally corrected which in turn will result in a smoother image.

Claims 9 - 12, and 18 - 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanpei (US PgPub 2001/0050715) in further view of Kinjo et al. (US patent No. 6,631,208) and in further view of Yoshida (US patent No. 6,930,716).

Regarding **claim 9,** as mentioned above in the discussion of claim 1, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. However, Sanpei in view of Kinjo et al. fail to disclose the CCD imager architecture, wherein: the plurality is a first plurality; rows of the matrix are grouped into a second plurality of banks, each bank being organized into a third plurality of arrays of the pixels; the pixel arrays are arranged to transfer information along a first direction; and the CCD imager architecture further comprises a fourth plurality of information-transfer linear arrays of information-transferring cells, each information-transfer array being associated with at least one bank and arranged adjacent to a side of the at least one bank such that two neighboring banks are separated by an information-transferring linear-array. Yoshida, on the other hand discloses that the CCD imager architecture, wherein: the plurality is a

first plurality; rows of the matrix are grouped into a second plurality of banks, each bank being organized into a third plurality of arrays of the pixels; the pixel arrays are arranged to transfer information along a first direction; and the CCD imager architecture further comprises a fourth plurality of information-transfer linear arrays of information-transferring cells, each information-transfer array being associated with at least one bank and arranged adjacent to a side of the at least one bank such that two neighboring banks are separated by an information-transferring linear-array.

More specifically, Yoshida teaches that each the CCD imager architecture, wherein: the plurality is a first plurality (figure 2); rows of the matrix are grouped into a second plurality of banks (figure 2), each bank being organized into a third plurality of arrays of the pixels (figure 2); the pixel arrays are arranged to transfer information along a first direction; and the CCD imager architecture further comprises a fourth plurality of information-transfer linear arrays of information-transferring cells (figure 2), each information-transfer array being associated with at least one bank and arranged adjacent to a side of the at least one bank such that two neighboring banks are separated by an information-transferring linear-array (figure 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Kinjo et al. and Sanpei with the teachings of Yoshida because in column 1 lines 16 et seq. Yoshida teaches that the image pickup structure taught in the invention will increase sensitivity of the device this would render better image quality.

Regarding **claim 10,** as mentioned above in the discussion of claim 9, Sanpei in further view of Kinjo et al. and in further view of Yoshida teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that the CCD imager wherein: each pixel array includes pixels of a first type (column 13, lines 18 *et seq.*); a predetermined number of the pixel arrays are sampling arrays that further include a second type of pixel (figure 6 and figure 20 A-B, Area 5 i.e. second type pixels are arranged near all other types of pixels); each sampling array is arranged so that sample-information from the second type pixel can be transferred to the associated information-transfer array without the sample-information having to be conveyed via any of the first type pixels in the sampling array (figure 6 and figure 20 A-B, pixels are arranged in areas i.e. blocks of similar areas); the sampling array being controllable to read the second type pixel without having to read all of the first type pixels in the sampling array (column 3, lines 32 *et seq.*).

Regarding **claim 11,** as mentioned above in the discussion of claim 10, Sanpei in further view of Kinjo et al. and in further view of Yoshida teaches all of the limitations of the parent claim. Additionally, Yoshida teaches that each pixel array is configured as a linear array of pixels that is controllable to transfer information in a second direction perpendicular to the first direction (figure 2).

Regarding **claim 12,** as mentioned above in the discussion of claim 11, Sanpei in further view of Kinjo et al. and in further view of Yoshida teaches all of the limitations of

the parent claim. Additionally, Yoshida teaches that each linear array is arranged into a space-filling configuration that covers an area that would otherwise correspond to a two-dimensional array (figure 2).

Regarding **claim 18,** as mentioned above in the discussion of claim 14, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that each pixel array includes first type pixels (column 13, lines 18 *et seq.*), and a predetermined number of the pixel arrays are sampling arrays that further include a second type pixel (figure 6 and figure 20 A-B, Area 5 i.e. second type pixels are arranged near all other types of pixels); and the method further comprises transferring sample-information from the second type pixel to the associated information-transfer array (figure 6 and figure 20 A-B, pixels are arranged in areas i.e. blocks of similar areas) without having to convey the sample-information via any of the first type pixels in the sampling array (column 3, lines 32 *et seq.*).

However, Sanpei in view of Kinjo et al. fail to disclose that the plurality is a first plurality; rows of the matrix are grouped into a second plurality of banks, each bank being organized into a third plurality of arrays of the pixels; and the pixel-differentiated architecture further includes a fourth plurality of information-transfer linear arrays of information-transferring cells, each information-transfer array being associated with at least one bank and arranged adjacent to a side of the at least one bank such that two neighboring banks are separated by an information-transferring linear-array. Yoshida, on the other hand discloses that the plurality is a first plurality (figure 2); rows of the

matrix are grouped into a second plurality of banks, each bank being organized into a third plurality of arrays of the pixels (figure 2); and the pixel-differentiated architecture further includes a fourth plurality of information-transfer linear arrays of information-transferring cells (figure 2), each information-transfer array being associated with at least one bank and arranged adjacent to a side of the at least one bank such that two neighboring banks are separated by an information-transferring linear-array (figure 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Kinjo et al. and Sanpei with the teachings of Yoshida because in column 1 lines 16 et seq. Yoshida teaches that the image pickup structure taught in the invention will increase sensitivity of the device this would render better image quality.

Regarding **claim 19,** as mentioned above in the discussion of claim 18, Sanpei in further view of Kinjo et al. and in further view of Yoshida teaches all of the limitations of the parent claim. Additionally, Kinjo et al. teaches that reading of the second type pixel of a sampling array without having to read all of the first type pixels in the sampling array (column 3, lines 32 *et seq.*).

Claims 2 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanpei (US PgPub 2001/0050715) in further view of Kinjo et al. (US patent No. 6,631,208) and in further view of Examiners Official Notice.

Regarding **claims 2 and 15**, as mentioned above in the discussion of claims 1 and 14 respectively, Sanpei in further view of Kinjo et al. teaches all of the limitations of the parent claim. However, Sanpei in further view of Kinjo et al. fails to teach that operation of the read circuitry further including bucket brigading of charge.

The examiner takes Official Notice that it is old and well known in the art to use an operation of the read circuitry further including bucket brigading of charge in CCD sensors.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an operation of the read circuitry further including bucket brigading of charge as doing this would render a simpler low cost and more flexible device.

Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sanpei (US PgPub 2001/0050715) in further view of Kinjo et al. (US patent No. 6,631,208) in further view of Yoshida (US patent No. 6,930,716), and in further view of Yamamoto (US patent No. 6,549,644).

Regarding **claim 13,** as mentioned above in the discussion of claim 12, Sanpei in further view of Kinjo et al. and in further view of Yoshida teaches all of the limitations of the parent claim. However, Sanpei in further view of Kinjo et al. and in further view of Yoshida fail to teach that the space-filling configuration is one of a raster and a piece-wise continuous spiral. Yamamoto, on the other hand discloses that the space-filling configuration is one of a raster and a piece-wise continuous spiral.

More specifically, Yamamoto teaches that the space-filling configuration is one of a raster and a piece-wise continuous spiral (figure 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Kinjo et al., Sanpei, and Yoshida with the teachings of Yamamoto because in column 1 lines 66 et seq. Yamamoto teaches that doing so will result will raise the processing speed which will result in a faster system.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Norimatsu (US patent No. 6,697,537) teaches comparing of neighboring pixels in a CCD sensor.

Norimatsu (US PgPub 2002/0164085) teaches comparing of neighboring pixels in a CCD sensor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Usman Khan whose telephone number is (571) 270-1131. The examiner can normally be reached on Mon-Thru 6:45-4:15; Fri 6:45-3:15 or Alt. Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Usman Khan
11/22/2006
Patent Examiner
Art Unit 2622

DAVID OMETZ
SUPERVISORY PATENT EXAMINER